Factors Associated with Adherence to COVID-19 Prevention: A Cross-Sectional Online Survey Among the Elderly in Tabanan City, Indonesia

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Abstract: COVID-19 is a global health problem that can spread quickly, and the elderly are the age group at the greatest risk of being seriously ill and hospitalized if exposed to COVID-19. To reduce this risk, the elderly need to comply with COVID-19 prevention protocols. This study aimed to assess factors associated with adherence to COVID-19 prevention. The study was conducted in Tabanan City using a cross-sectional design. A total of 334 respondents were selected using cluster sampling. Data were obtained using an online questionnaire survey (Google Forms) and analyzed using descriptive statistics to measure adherence to COVID-19 prevention. Multiple logistic regression was performed to determine factors associated with adherence to COVID-19 prevention. The results showed that more than half of respondents (56.7%) adhered to COVID-19 prevention implementation. Gender ($p = 0.041$; AOR: 0.506), knowledge about COVID-19 ($p = 0.011$; AOR: 1.91), perception about COVID-19 ($p < 0.001$; AOR: 2.61), motivation to implement health protocols ($p < 0.001$; AOR: 3.36), and access to information ($p < 0.001$; AOR: 2.61) were significantly associated with adherence to COVID-19 prevention. The proportion of the elderly who do not adhere to COVID-19 prevention protocols is still high; therefore, compliance needs to be improved by conducting health education regularly on preventing COVID-19 among the elderly.

1 BACKGROUND

On 11 March, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic (WHO, 2021). The COVID-19 pandemic has presented unprecedented challenges for the healthcare system (Chowdhury et al., 2020), since this respiratory virus has spread to local communities around the world. Coronavirus disease 2019 (COVID-19) has spread rapidly around the world, wreaking havoc on patients, healthcare workers, healthcare systems, and economies. The impact can be exacerbated when infections spread to low- and middle-income countries, making it difficult to proactively respond to the pandemic (Bong et al., 2020). Cultural and economic conditions can contribute to reinforcing the spread of the virus in the environment (Elhadi et al., 2020). One of the strongest consensuses surrounding COVID-19 is that the elderly are by far the most vulnerable demographic (Daoust, 2020). The WHO has stated that more than 95 percent of deaths due to COVID-19 occurred in individuals over 60 years old. That is why, during the handling of the COVID-19 outbreak, the government has paid special attention to the elderly's physical and mental health because they are at high risk of COVID-19 infection (Pradana et al., 2020). The elderly who have chronic diseases, such as heart disease, diabetes, asthma, and cancer, are more at risk of COVID-19 infection (Smorenberg et al., 2021). Complicated diseases can cause

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disturbances and reduce the function of important organs of the body. COVID-19 can exacerbate chronic diseases and cause death.

As an effort to prevent the early COVID-19 outbreak, the Indonesian Minister of Health issued Decree of the Ministry of Health Number HK.01.07/MENKES/104/2020 regarding the determination of novel coronavirus infection (2019-nCoV Infection) as a type of disease that can cause outbreaks, and the efforts to overcome it. This determination was based on the consideration that the 2019-nCoV infection had been declared a Public Health Emergency of International Concern (PHEIC) by the WHO. Through this policy, the government invited the public to comply with the directives and regulations issued to work together to stop the spread of COVID-19. (Yanti et al., 2020). However, there are still many people who are less concerned with the rules and policies made by the government. This has prompted countries around the world to consider implementing strict non-pharmaceutical interventions as a priority to combat the pandemic. These interventions include the (mandatory) use of face masks, physical distancing, regular hand washing, and the use of hydroalcoholic solutions for disinfection. These measures have been effective in countering epidemics caused by other respiratory viruses such as influenza, SARS and Middle East respiratory syndrome in China, Korea, Taiwan and other countries (Jang et al., 2020; Noh et al., 2020; Q. Wang & Yu, 2020).

Research has found that adherence to health protocols can be influenced by community knowledge (Saqlain et al., 2020). Another study stated that adherence to health protocols stem from perceptions of COVID-19 transmission risk factors (Shahnazi et al., 2020). Furthermore, attitudes that support health protocol policies are related to a person's compliance in implementing health protocols, as can be seen from research conducted by Wiranti, Sriatmi, & Kusumastuti (2020). That study showed that respondents with high adherence to large-scale social restriction policies mostly had supportive attitudes towards large-scale social restrictions policies. The media also plays a role in providing information about COVID-19. The media as a source of information both in print and electronic form has an important role in shaping public perceptions and responses towards COVID-19 (Wang & Tang, 2020). Observing the existing conditions, it is very important to systematically review the elderly's compliance in implementing health protocols during the pandemic and the factors related to such compliance.

2 SUBJECTS AND METHODS

This study used quantitative methods with a cross sectional approach. The population in this study were the elderly who were working in the UPTD Puskesmas Tabanan III area with a total of 1,849 people. Cluster sampling was used to yield a sample size of 344 respondents. The research was carried out in the working area of UPTD Puskesmas Tabanan III with a research time of two months, from March to May 2021.

The instrument used in this study was a questionnaire. There were three categories in the questionnaire regarding respondents' characteristics, the elderly's compliance in implementing health protocols, and the factors related to the elderly's compliance in implementing the health protocol. Data were analyzed using the binary logistic regression test. This study has undergone an ethical test and was declared ethically worthy by the Ethics Committee of the Bali Institute of Technology and Health with approval number 04.0318/KEPITEKES-BALI/III/2021.

3 RESULTS

3.1 Respondents' General Characteristics

Respondents' general characteristics consisted of age, gender, education level, type of work, and income. The description of respondents' characteristics is explained in the form of a frequency distribution. Table 1 shows the distribution of respondents' characteristics.

Table 1: Respondents' General Characteristics (n = 344).

Variable	f	%
Age (years old)		
60-69	312	90.7
≥ 70	32	9.3
Gender		
Male	136	39.5
Female	208	60.5
Educational level		
Uneducated	44	12.8
Primary School	52	15.1
Junior High School	32	9.3
Senior High School	96	27.9
University	120	34.9
Occupation		

Unemployed	48	14.0
Retired	104	30.2
Farmer	24	6.9
Trader	48	14.0
Private employee	24	6.9
Entrepreneur	48	14.0
Civil servant	48	14.0
Individual income		
< Rp. 1,000,000	80	23.3
≥ Rp. 1,000,000	264	76.7

Table 1 shows that the majority of respondents' ages were in the range of 60-69 years, amounting to 312 respondents (90.7%). The majority of respondents were female with a total of 208 respondents (60.5%). The educational level shows that the majority of respondents' last education was university, with as many as 120 respondents (34.9%). As for work, most respondents were retired with as many as 104 respondents (30.2%). The majority of respondents' income was more than or equal to Rp. 1,000,000 with as many as 264 respondents (76.7%).

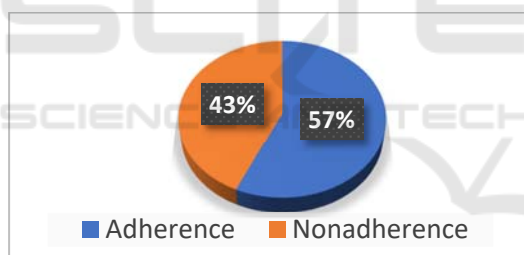## 3.2 Overview of Adherence in Implementing COVID-19 Prevention

Figure 1: Adherence of COVID-19 Prevention (n = 344).

Figure 1 shows that 56.7% of respondents were obedient in implementing COVID-19 health protocols, while 43% of respondents showed non-compliance.

Table 2: Frequency Distribution of Knowledge, Perception, Motivation, Attitude, and Access to Information (n = 344).

Variable	f	%
Knowledge about COVID-19		
Good	178	51.7
Fair	57	16.6
Less	109	31.7
Perception of COVID-19		
Positive	184	53.5
Negative	160	46.5
Motivation to Implement COVID-19 Prevention		
High	200	58.1
Low	144	41.9
Attitude Towards COVID-19 Prevention Policy		
Positive	176	51.2
Negative	168	48.8
Information Access		
High	174	50.6
Low	170	49.4

Table 2 shows that the majority of respondents had good knowledge about COVID-19, with as many as 178 respondents (46.5%). Based on the perception of COVID-19, it can be seen that most respondents had a positive perception, amounting to 184 respondents (53.5%). It can also be seen that the majority of respondents, namely 200 respondents (58.1%), had high motivation to implement health protocols. Most respondents also showed a positive attitude towards health protocol policies, at as many as 176 respondents (51.2%). Judging from the factor of access to information, the majority, namely 174 respondents (50.6%), had high access to information.

3.3 Factors Associated with Adherence to COVID-19 Prevention

A multivariate analysis was carried out with the aim of controlling the confounding variables to ensure the independent variables had a pure influence on the compliance variable in implementing COVID-19 health protocols. The results of the multivariate analysis are described in Table 3. Respondents of the male sex had 0.494 times or 49.4% lower risk of complying with health protocols compared to female respondents (Adj. OR = 0.506; 95% CI = 0.26-0.97; p = 0.041). Respondents with good knowledge of COVID-19 had the opportunity to increase health protocol compliance by 1.91 times compared to respondents who had sufficient or less knowledge about COVID-19 (Adj. OR = 1.91; 95% CI = 1.16-3.14; p = 0.011). Furthermore, respondents with a positive perception of COVID-19 had the opportunity to increase compliance with implementing COVID-19 health protocols by 2.61 times compared to respondents who had a negative perception (Adj. OR = 2.61, 95% CI = 1.59-4.75; p < 0.001). Respondents with high motivation to implement health protocols had the opportunity to increase compliance with implementing COVID-19 health protocols by 3.36 times compared to respondents who had low

Table 3: Analysis of Factors Associated with Elderly Adherence to COVID-19 Prevention (n = 344).

Variable	Adherence		Adj. OR	95% CI		p-value
	Adhere n (%) 195	Non-adhere n (%) 149		Lower	Upper	
Gender						
Male	69 (50.7)	67 (49.3)	0.506	0.26	0.97	0.041
Female[*]	126 (60.6)	82 (39.4)				
Knowledge about COVID-19						
Fair/Less[*]	75 (45.2)	91 (54.8)				
Good	120 (67.4)	58 (32.6)	1.91	1.16	3.14	0.011
Perception about COVID-19						
Negative[*]	69 (43,1)	91 (56.9)				
Positive	126 (68.5)	58 (31.5)	2.61	1.59	4.75	<0.001
Motivation to Implement COVID-19 Prevention						
Low[*]	47 (32.6)	97 (67.4)				
High	148 (74.0)	52 (26.0)	3.36	1.94	5.83	<0.001
Information Access						
Low[*]	64 (37.6)	106 (62.4)				
High	131 (75.7)	64 (37.6)	2.61	1.58	4.29	<0.001

motivation to implement health protocols (Adj. OR = 3.36; 95% CI = 1.94-5.83; p < 0.001). Furthermore, respondents with wide access to information had the opportunity to increase compliance with COVID-19 health protocols by 2.61 times compared to respondents with low access to information (Adj. OR = 2.61; 95% CI = 1.58-4.29; p < 0.001)

4 DISCUSSION

This study found that the majority of respondents were obedient in implementing COVID-19 prevention efforts. The prevention referred to in this study relates to the application of 5M (wearing masks, washing hands with soap/using hand sanitizer, maintaining distance, avoiding crowds, and limiting mobility). Adherence to COVID-19 prevention was dominantly carried out by respondents, namely by using a mask covering the nose and mouth and to the bottom of the chin (92.1%).

However, the findings in this study still paled in comparison to research conducted by Park et al. (2020) in America, who found that respondents' adherence to the CDC guidelines on COVID-19 health protocols was generally high with an average of above 85%. As well as research conducted in several countries in Asia, including Hong Kong, which reported that more than 77% of respondents complied with the implementation of the COVID-19 prevention (Kwok et al., 2020). Furthermore, research conducted in Macau and South Korea showed high compliance measures in preventing COVID-19 (wearing masks, washing hands, and avoiding crowded places) with each criterion rating above 68% (Lee et al., 2021; Tong et al., 2020). Surveys related to community behavior during the COVID-19 pandemic (wearing masks, using hand sanitizers/disinfectants, washing hands for 20 seconds with soap, avoiding handshakes, avoiding crowds, and maintaining a minimum distance of one meter) were also conducted in Indonesia by BPS (2020), showing that the level of respondents' compliance was good with the compliance percentage for each variable being above 70%. Specifically, respondents with an age range above 60 years have complied with COVID-19 prevention efforts as evidenced by the compliance percentages of more than 80%. (BPS, 2020).

The difference in compliance percentage between this study and other research is due to the not yet optimal implementation of COVID-19 prevention in respondents. Based on the results of the study, it is known that the percentage of non-compliance in avoiding crowds was still high. This is indicated by the number of respondents who received visits from their children, grandchildren, or relatives at home (23.3%) and attended traditional ceremonies where there were crowds of people (4.7%).

Research conducted by Mirbeyk, Saghazadeh, & Rezaei (2021), regarding geriatrics and COVID-19 stated that aging affects immune system functions, thereby increasing the risk of infection and adverse outcomes. In addition, aging is a significant risk factor for chronic comorbidities that can place the elderly in a fragile state; therefore, special attention is

needed for the elderly during the COVID-19 pandemic to reduce their mortality rate. Adherence to COVID-19 prevention is very important in preventing and dealing with COVID-19 in the community. If elderly compliance is low regarding the implementation of COVID-19 prevention, it will lead to an increase in morbidity and mortality among the elderly.

The results of the study found that the majority of respondents had good knowledge about COVID-19. This study also found that knowledge had a strong and significant relationship with elderly compliance in implementing health protocols during the COVID-19 pandemic. Respondents who had good knowledge tended to be more obedient in implementing health protocols than respondents with sufficient or less knowledge. However, the findings in this study have a lower percentage compared to research conducted by Zhong, B. L. et al (2020) in China, which stated that 90% of urban Chinese people had good knowledge about COVID-19. This is also true of research conducted in America and the UK, which reported that respondents had good knowledge about the disease's modes of transmission and symptoms with a percentage above 80% (Geldsetzer, 2020). Knowledge is one of the important things that must be considered in the context of handling cases, especially in preventing and suppressing the spread of the virus (Law et al., 2020). The knowledge about COVID-19 referred to in this study includes definitions, signs, symptoms, and precautions for COVID-19 transmission. The findings in this study are in line with the research conducted by Sari & Atiqoh (2020), who stated that there was a relationship between society's knowledge and compliance with using masks as an effort to prevent COVID-19 transmission. The knowledge possessed will influence a person in determining and making decisions (Purnamasari & Raharyani, 2020). This is confirmed by the research results showing that the majority of the elderly who had high knowledge were more obedient to the COVID-19 prevention efforts. This high level of knowledge was supported by the educational level of most respondents, who were in the higher education category (62.8%). Increasing communities' knowledge on COVID-19 can encourage people to comply with all health protocols that have been established. This is also supported by Achmadi (2013), who stated that a person who has knowledge of information will be able to determine and make decisions in dealing with a problem. In other words, people who have knowledge about COVID-19 will be able to determine how they should behave in dealing with the disease.

The results of this study also show that the majority of respondents had positive perceptions about COVID-19. This study also found that perception had a strong and significant relationship with compliance in implementing health protocols during the COVID-19 pandemic. This is in line with research conducted by Pertiwi & Budiono (2021), who found that the majority of respondents (56.4%) had a positive perception. The results of this study are also in line with research by Tong et al. (2020), which stated that compliance in taking preventive measures against COVID-19 is related to the four Health Belief Model (HBM) factors, including individual perceptions of the disease's severity (perceived severity), individual perceptions of the benefits that will be obtained when taking an action (perceived benefits), individual perception of the obstacles that will be faced when taking an action (perceived barrier), and cues to act (cue-to-action). This is also in line with research by Jones, Smith, & Llewellyn (2014), which stated that overall HBM can improve compliance. However, the HBM factors that work optimally can vary across each behavior. Effective control of COVID-19 is highly dependent on the preventive behavior of the community and certain risk groups, where the elderly have a high risk of contracting COVID-19 (Pradana et al., 2020). Perceived risk can be a key factor influencing preventative behavior (Zhong et al., 2020); therefore, it is necessary to increase the elderly's understanding about how much risk they will face if exposed to COVID-19 in order to get them to comply in implementing health protocols.

This study showed that the majority of respondents had high motivation in implementing COVID-19 prevention efforts. This study also showed that motivation had a strong and significant relationship with elderly compliance in implementing health protocols during the COVID-19 pandemic. This is in line with research conducted by Afrianti & Rahmiati (2021), with the result that the majority (55.8%) of the community had high motivation in following the COVID-19 protocols. This is in line with the opinion of Pratiko, Rahmawati, & Chrysmadani (2011), which was that someone who has good motivation tends to behave well, especially in maintaining personal health and safety. This is also in line with research conducted by Kuiper et al. (2020), which found that intrinsic motivation can increase behavior to comply with applicable rules. Motivation is the most dominant predictor factor that has a direct influence on the compliance of the elderly in implementing health protocols during the COVID-19 pandemic. This can be seen from the opportunity

value indicated by motivation, which is the highest value compared to other factors. According to Chotimah et al. (2019), motivation is one of the factors that underlie a person in behaving using basic self-protection tools. Based on the Protection Motivation Theory (PMT) proposed by Prentice-Dunn & Rogers, individuals who perceive a higher level of risk are more likely to adopt preventive behavior (Zhong et al., 2020). Good motivation can encourage the elderly to comply with COVID-19 prevention efforts and thereby reduce COVID-19 cases and break the chain of transmission.

Based on the results of this study, the majority of respondents had high access to information related to COVID-19. This study also showed that there is a strong and significant relationship between access to information about COVID-19 and elderly compliance in implementing health protocols during the COVID-19 pandemic. The results of this study are in line with research conducted by Triyanto & Kusumawardani (2020), which stated that the majority of respondents (75%) had good access to information related to COVID-19. The results of this study are also in line with research conducted by Buonomo & Della Marca (2020) in Italy, which found that published case development data to the public was able to increase public compliance with self-defense and quarantine arrangements, thereby reducing the cumulative incidence rate by 5% and mortality by 11%. Likewise, research conducted by Findayani (2020)found that media, especially social media, reduced the risk of COVID-19 spreading. Other studies have also stated that the media as a source of information, both in print and electronic form, have an important role in shaping public perceptions and responses to COVID-19. Nowadays, social media, which is growing rapidly, makes it easy for humans to establish communication and access information anywhere and anytime (Wang & Tang, 2020). The results of the case study show that access to health information played a role in community empowerment. The role of access to health information includes knowledge of health and healthcare; the ability to find, understand, interpret, and communicate health information; and the ability to request appropriate healthcare and make critical health decisions. Various types of information play a role in increasing people's knowledge, attitudes, and skills to live sanitary and healthy lives (Sulaeman et al., 2015). Access to information will encourage people to participate in health development, both at the individual level and at the community group level.

5 CONCLUSION

Based on the results of research on factors associated with adherence to COVID-19 prevention among the elderly, it can be concluded: 1) the majority of respondents were obedient in implementing health protocols during the COVID-19 pandemic; 2) the factors that influenced the elderly's compliance in implementing health protocols during the COVID-19 pandemic were gender, knowledge about COVID-19, perceptions about COVID-19, motivation in implementing COVID-19 health protocols, and access to information; 3) the motivational factor was the most dominant factor influencing compliance in implementing health protocols during the COVID-19 pandemic.

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REFERENCES

Achmadi, U. F. (2013). *Kesehatan Masyarakat : Teori dan Aplikasi*. Rajawali Pers.

Afrianti, N., & Rahmiati, C. (2021). Faktor-faktor yang mempengaruhi kepatuhan masyarakat terhadap protokol kesehatan covid-19. *Jurnal Ilmiah Permas*, *11*(1), 113–124.

Bong, C.-L., Brasher, C., Chikumba, E., McDougall, R., Mellin-Olsen, J., & Enright, A. (2020). The COVID-19 pandemic: effects on low-and middle-income countries. *Anesthesia and Analgesia*.

BPS. (2020). Perilaku Masyarakat Di Masa Pandemi Covid-19. In *Perilaku Masyarakat di Masa Pandemi Covid-19 BPS RI* (Vol. 19, Issue September). Badan Pusat Statistik. https://www.bps.go.id/publication/download.html?nrb vfeve=ZjM3NmRjMzNjZmNkZWVjNGE1MTRmM Dlj&xzmn=aHR0cHM6Ly93d3cuYnBzLmdvLmlkL3 B1YmxpY2F0aW9uLzIwMjAvMDkvMjgvZjM3Nm RjMzNjZmNkZWVjNGE1MTRmMDljL3BlcmlsYWt 1LW1hc3lhcmFrYXQtZGktbWFzYS1wYW5kZW1p LWNvdmlkLTE5Lmh0bWw%25

Buonomo, B., & Marca, R. Della. (2020). Effects of information-induced behavioural changes during the COVID-19 lockdowns: The case of Italy: COVID-19 lockdowns and behavioral change. *Royal Society Open*

Science, *7*(10). https://doi.org/10.1098/rsos.201635rsos201635

Chotimah, C. C., Haryadi, & Roestijawati, N. (2019). Pengaruh pengetahuan, motivasi dan persepsi risiko terhadap perilaku penggunaan alat pelindung diri dasar yang dimoderasi faktor pengawasan pada civitas hospitalia rsgmp unsoed 1,2,3. *Jurnal Ekonomi, Bisnis, Dan Akuntansi*, *21*(3), 1–11.

Chowdhury, R., Heng, K., Shawon, M. S. R., Goh, G., Okonofua, D., Ochoa-Rosales, C., Gonzalez-Jaramillo, V., Bhuiya, A., Reidpath, D., Prathapan, S., Shahzad, S., Althaus, C. L., Gonzalez-Jaramillo, N., Franco, O. H., & Group, T. G. D. I. S. for C.-19 C. (2020). Dynamic interventions to control COVID-19 pandemic: a multivariate prediction modelling study comparing 16 worldwide countries. *European Journal of Epidemiology*, *35*(5), 389–399. https://doi.org/10.1007/s10654-020-00649-w

Daoust, J. F. (2020). Elderly people and responses to COVID-19 in 27 Countries. *PLoS ONE*, *15*(7), 1–13. https://doi.org/10.1371/journal.pone.0235590

Elhadi, M., Msherghi, A., Alkeelani, M., Alsuyihili, A., Khaled, A., Buzreg, A., Boughididah, T., Abukhashem, M., Alhashimi, A., & Khel, S. (2020). Concerns for low-resource countries, with under-prepared intensive care units, facing the COVID-19 pandemic. *Infection, Disease & Health*, *25*(4), 227–232.

Findayani, A. (2020). Peran Sosial Media dalam Penyampaian Informasi dan Kesiapsiagaan Masyarakat Menghadapi Covid-19 di Kota Semarang. *Jurnal Geografi : Media Informasi Pengembangan Dan Profesi Kegeografian*, *17*(2), 63–69. https://doi.org/10.15294/jg.v17i2.24506

Geldsetzer, P. (2020). Annals of Internal Medicine. *Annals of Internal Medicine*, *172*(1), ITC1–ITC14. https://doi.org/10.7326/AWED202001070

Jang, W. M., Jang, D. H., & Lee, J. Y. (2020). Social distancing and transmission-reducing practices during the 2019 coronavirus disease and 2015 Middle East respiratory syndrome coronavirus outbreaks in Korea. *Journal of Korean Medical Science*, *35*(23).

Jones, C. J., Smith, H., & Llewellyn, C. (2014). Evaluating the effectiveness of health belief model interventions in improving adherence: a systematic review. *Health Psychology Review*, *8*(3), 253–269. https://doi.org/10.1080/17437199.2013.802623

Kuiper, M. E., de Bruijn, A. L., Reinders Folmer, C., Olthuis, E., Brownlee, M., Kooistra, E. B., Fine, A., & van Rooij, B. (2020). The Intelligent Lockdown: Compliance with COVID-19 Mitigation Measures in the Netherlands. *SSRN Electronic Journal*, 1–38. https://doi.org/10.2139/ssrn.3598215

Kwok, K. O., Li, K. K., Chan, H. H. H., Yi, Y. Y., Tang, A., Wei, W. I., & Wong, S. Y. S. (2020). Community Responses During the Early Phase of the COVID-19 Epidemic in Hong Kong. *Emerging Infectious Diseases*, *26*(7), 1575–1579. https://doi.org/10.1101/2020.02.26.20028217

Law, S., Leung, A. W., & Xu, C. (2020). Severe acute respiratory syndrome (SARS) and coronavirus disease-2019 (COVID-19): From causes to preventions in Hong Kong. *International Journal of Infectious Diseases*, *January*. https://doi.org/10.1016/j.ijid.2020.03.059

Lee, M., Kang, B. A., & You, M. (2021). Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea. *BMC Public Health*, *21*(1), 1–10. https://doi.org/10.1186/s12889-021-10285-y

Mirbeyk, M., Saghazadeh, A., & Rezaei, N. (2021). Geriatrics and COVID-19. In N. Rezaei (Ed.), *Coronavirus Disease - COVID-19* (pp. 209–222). Springer International Publishing. https://doi.org/10.1007/978-3-030-63761-3_13

Noh, J. Y., Seong, H., Yoon, J. G., Song, J. Y., Cheong, H. J., & Kim, W. J. (2020). Social distancing against COVID-19: implication for the control of influenza. *Journal of Korean Medical Science*, *35*(19).

Park, C. L., Russell, B. S., Fendrich, M., Finkelstein-Fox, L., Hutchison, M., & Becker, J. (2020). Americans' COVID-19 Stress, Coping, and Adherence to CDC Guidelines. *Journal of General Internal Medicine*, *35*(8), 2296–2303. https://doi.org/10.1007/s11606-020-05898-9

Pertiwi, G. S., & Budiono, I. (2021). Perilaku Physical Distancing Masyarakat Pada Masa Pandemi Covid-19. *Indonesian Journal of Public Health and Nutrition*, *1*(1), 90–100.

Pradana, M., Syahputra, S., Wardhana, A., Rustandi, B., & Wijayangka, C. (2020). The Effects of Incriminating COVID-19 News on the Returning Indonesians ' Anxiety The Effects of Incriminating COVID-19 News on the. *Journal of Loss and Trauma*, *25*(8), 656–661. https://doi.org/10.1080/15325024.2020.1771825

Pratiko, M. ., Rahmawati, R., & Chrysmadani, E. P. (2011). Analisis Faktor yang Berhubungan dengan Kepatuhan Perawat dalam Penggunaan Alat Pelindung Diri Dasar (Handscoon dan Masker) di Rumah Sakit Grha Husada Gresik. *Journal of Nurse Community*, *3*(5).

Purnamasari, I., & Raharyani, A. E. (2020). Tingkat Pengetahuan Dan Perilaku Masyarakat Kabupaten Wonosobo Tentang Covid -19. *Living Islam: Journal of Islamic Discourses*, *3*(1), 125.

Saqlain, M., Munir, M. M., Rehman, S. U., Gulzar, A., Naz, S., Ahmed, Z., Tahir, A. H., & Mashhood, M. (2020). Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a crosssectional survey from Pakistan. *Journal of Hospital Infection*, *January*, 19–20. https://doi.org/10.1016/j.jhin.2020.05.007

Sari, D. P., & Atiqoh, N. S. (2020). Hubungan Antara Pengetahuan Masyarakat Dengan Kepatuhan Penggunaan Masker Sebagai Upaya Pencegahan Penyakit Covid-19 Di Ngronggah. *Infokes: Jurnal Ilmiah Rekam Medis Dan Informatika Kesehatan*, *10*(1), 52–55. https://doi.org/10.47701/infokes.v10i1.850

Shahnazi, H., Ahmadi-Livani, M., Pahlavanzadeh, B., Rajabi, A., Hamrah, M. S., & Charkazi, A. (2020). Assessing Preventive Health Behaviors from COVID-19: a Cross-sectional Study with Health Belief Model

in Golestan Province, Northern of Iran. *Infectious Diseases of Poverty*, *9*(1), 1–9. https://doi.org/10.1186/s40249-020-00776-2

Smorenberg, A., Peters, E. J., van Daele, P. LA, Nossent, E. J., & Muller, M. (2021). How does SARS-CoV-2 targets the elderly patients? A review on potential mechanisms increasing disease severity. *European Journal of Internal Medicine*, *83*(November 2020), 1–5. https://doi.org/10.1016/j.ejim.2020.11.024

Sulaeman, E. S., Murti, B., & Waryana, W. (2015). Peran Kepemimpinan, Modal Sosial, Akses Informasi serta Petugas dan Fasilitator Kesehatan dalam Pemberdayaan Masyarakat Bidang Kesehatan. *Kesmas: National Public Health Journal*, *9*(4), 353. https://doi.org/10.21109/kesmas.v9i4.749

Tong, K. K., Chen, J. H., Yu, E. W. yat, & Wu, A. M. S. (2020). Adherence to COVID-19 Precautionary Measures: Applying the Health Belief Model and Generalised Social Beliefs to a Probability Community Sample. *Applied Psychology: Health and Well-Being*, *12*(4), 1205–1223. https://doi.org/10.1111/aphw.12230

Triyanto, E., & Kusumawardani, L. H. (2020). Analysis of Change Behavior Prevention of Covid-19 Transmission Based on Integrated Behavior Model. *Jurnal Keperawatan Soedirman*, *15*(2). https://doi.org/10.20884/1.jks.2020.15.2.1441

Wang, Q., & Yu, C. (2020). The role of masks and respirator protection against SARS-CoV-2. *Infection Control & Hospital Epidemiology*, *41*(6), 746–747.

Wang, Z., & Tang, K. (2020). Combating COVID-19: health equity matters. *Nature Medicine*, *26*(4), 458. https://doi.org/10.1038/s41591-020-0823-6

WHO. (2021). *Listings of WHO's response to COVID-19*. World Health Organization.

Wiranti, Sriatmi, A., & Kusumastuti, W. (2020). Determinan kepatuhan masyarakat Kota Depok terhadap kebijakan pembatasan sosial berskala besar dalam pencegahan COVID-19. *Jurnal Kebijakan Kesehatan Indonesia*, *09*(03), 117–124. https://journal.ugm.ac.id/jkki/article/view/58484

Yanti, B., Wahyudi, E., Wahiduddin, W., Novika, R. G. H., Arina, Y. M. D., Martani, N. S., & Nawan, N. (2020). Community Knowledge, Attitudes, and Behavior Towards Social Distancing Policy As Prevention Transmission of Covid-19 in Indonesia. *Jurnal Administrasi Kesehatan Indonesia*, *8*(2), 4. https://doi.org/10.20473/jaki.v8i2.2020.4-14

Zhong, B. L., Luo, W., Li, H. M., Zhang, Q. Q., Liu, X. G., Li, W. T., & Li, Y. (2020). Knowledge, attitudes, and practices towards COVID-19 among chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. *International Journal of Biological Sciences*, *16*(10), 1745–1752. https://doi.org/10.7150/ijbs.45221

Zhong, Y., Liu, W., Lee, T. Y., Zhao, H., & Ji, J. (2020). Risk perception, knowledge, information sources and emotional states among COVID-19 patients in Wuhan, China. *Nursing Outlook*, *0*, 1–9. https://doi.org/10.1016/j.outlook.2020.08.005